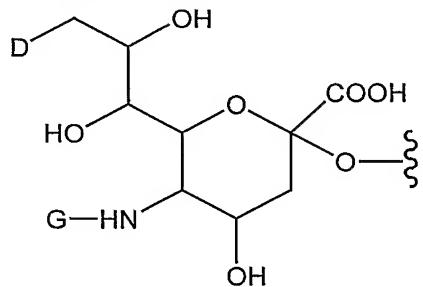


**WHAT IS CLAIMED IS:**

1 1. A follicle stimulating hormone peptide comprising the moiety:



2

3       wherein

4       D is a member selected from -OH and R<sup>1</sup>-L-HN-;

5       G is a member selected from R<sup>1</sup>-L- and -C(O)(C<sub>1</sub>-C<sub>6</sub>)alkyl;

6       R<sup>1</sup> is a moiety comprising a member selected a moiety comprising a straight-

7       chain or branched poly(ethylene glycol) residue; and

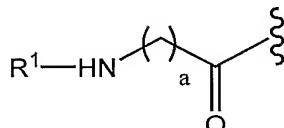
8       L is a linker which is a member selected from a bond, substituted or

9       unsubstituted alkyl and substituted or unsubstituted heteroalkyl,

10      such that when D is OH, G is R<sup>1</sup>-L-, and when G is -C(O)(C<sub>1</sub>-C<sub>6</sub>)alkyl, D is

11      R<sup>1</sup>-L-NH-.

1 2. The peptide according to claim 1, wherein L-R<sup>1</sup> has the formula:



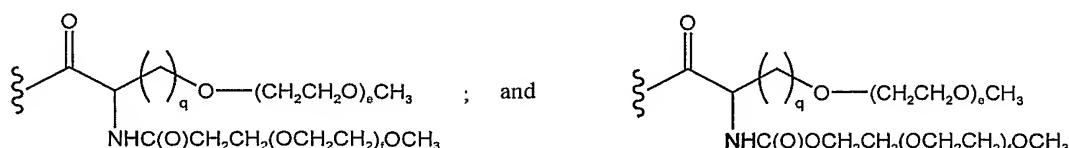
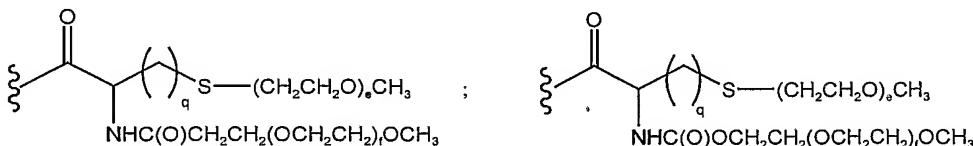
2

3       wherein

4       a is an integer from 0 to 20.

1 3. The peptide according to claim 1, wherein R<sup>1</sup> has a structure that is a member

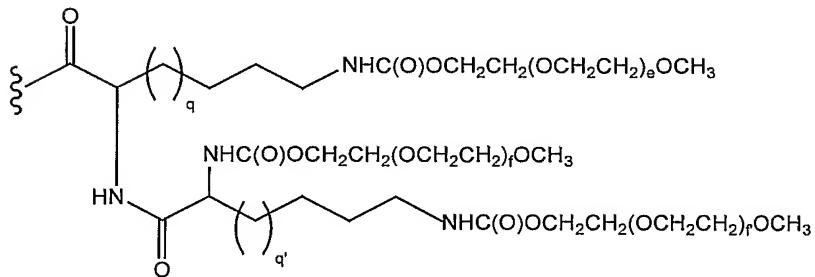
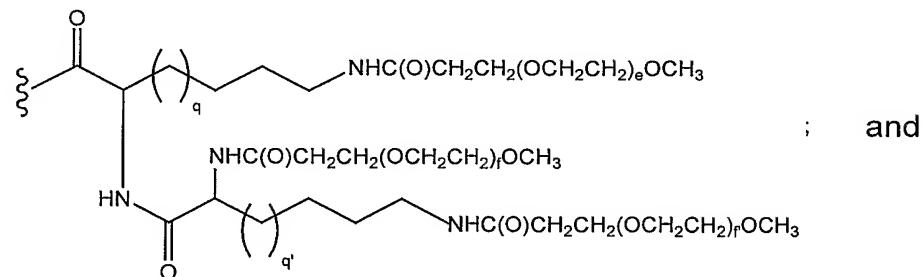
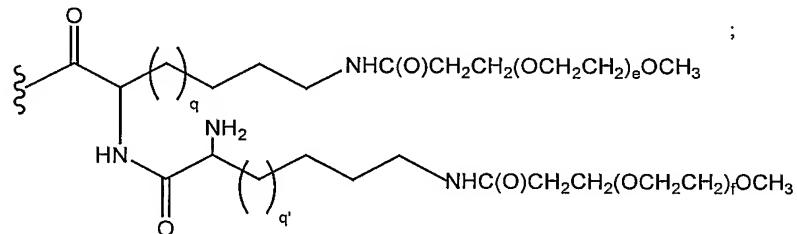
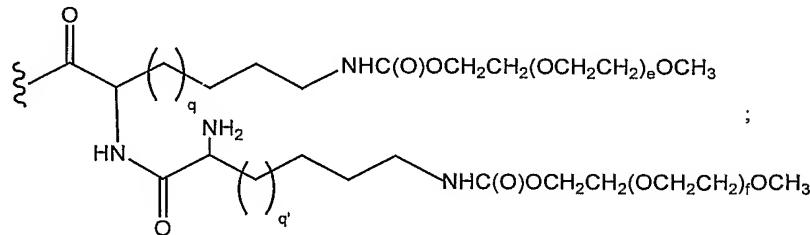
2       selected from:



3       wherein

5       e and f are integers independently selected from 1 to 2500; and  
 6       q is an integer from 0 to 20.

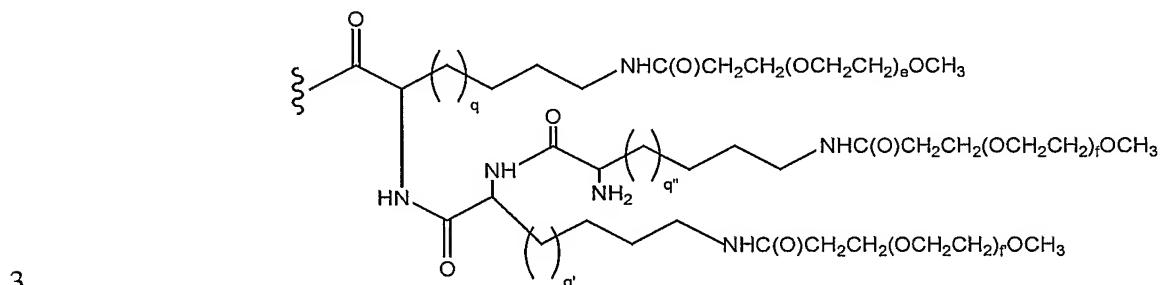
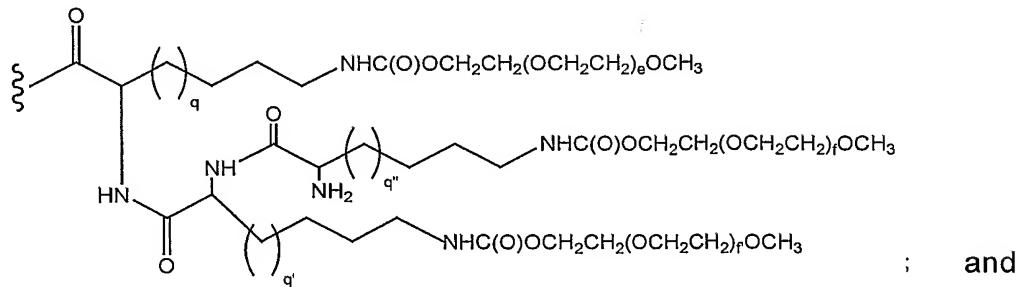
1       **4.**      The peptide according to claim 1, wherein R<sup>1</sup> has a structure that is a member  
 2      selected from:



3  
 4       wherein

5       e, f and f' are integers independently selected from 1 to 2500; and  
 6       q and q' are integers independently selected from 1 to 20.

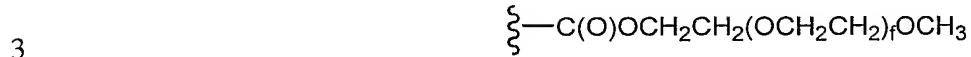
1 5. The peptide according to claim 1, wherein R<sup>1</sup> has a structure that is a member  
 2 selected from:



3 4 wherein

5 e, f and f<sup>o</sup> are integers independently selected from 1 to 2500; and  
 6 q, q' and q'' are integers independently selected from 1 to 20.

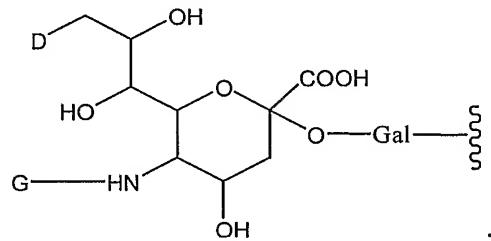
1 6. The peptide according to claim 1, wherein R<sup>1</sup> has a structure that is a member  
 2 selected from:



3 4 wherein

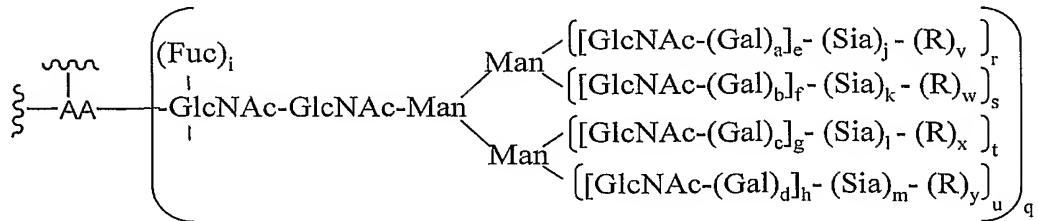
5 e and f are integers independently selected from 1 to 2500.

1 7. The FSH peptide according to claim 1, wherein said moiety has the formula:



1 8. The peptide according to claim 1, wherein said peptide has an amino acid  
 2 sequence selected from SEQ. ID. NO:1 and SEQ ID NO:2.

1 9. The FSH peptide according to claim 1, wherein said moiety has the formula:



2

3 wherein

4 a, b, c, d, i, r, s, t, and u are integers independently selected from 0 and 1;

5 q is 1;

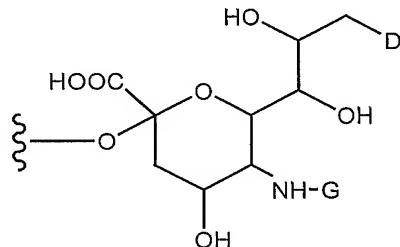
6 e, f, g, and h are members independently selected from the integers from 0 to 6;

7 j, k, l, and m are members independently selected from the integers from 0 and 100;

8 v, w, x, and y are independently selected from 0 and 1, and least one of v, w, x and y  
9 is 1;

10 AA is an amino acid residue of said FSH peptide;

11 Sia-(R) has the formula:



12

13 wherein

14 D is a member selected from -OH and R<sup>1</sup>-L-HN-;

15 G is a member selected from R<sup>1</sup>-L- and -C(O)(C<sub>1</sub>-C<sub>6</sub>)alkyl;

16 R<sup>1</sup> is a moiety comprising a member selected a straight-chain or branched  
17 poly(ethylene glycol) residue; and

18 L is a linker which is a member selected from a bond, substituted or  
19 unsubstituted alkyl and substituted or unsubstituted heteroalkyl,

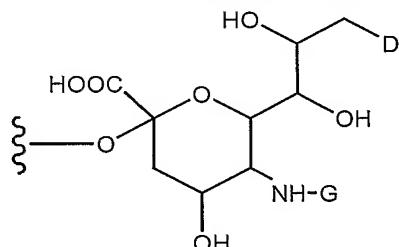
20 such that when D is OH, G is R<sup>1</sup>-L-, and when G is -C(O)(C<sub>1</sub>-C<sub>6</sub>)alkyl, D is  
21 R<sup>1</sup>-L-NH-.

1   **10.**   The peptide according to claim 9, wherein said amino acid residue is an  
2   asparagine residue.

1   **11.**   The peptide according to claim 10, wherein said amino acid residue is an  
2   asparagine residue which is a member selected from N7 of SEQ ID NO:2, N24 of  
3   SEQ ID NO:2, N52 of SEQ ID NO:1, and N78 of SEQ ID NO:1, and combinations  
4   thereof.

1   **12.**   The peptide according to claim 1, wherein said peptide is a bioactive follicle  
2   stimulating hormone peptide.

1   **13.**   A method of making a FSH peptide conjugate comprising the moiety:



2  
3   wherein

4   D is a member selected from -OH and R<sup>1</sup>-L-HN-;

5   G is a member selected from R<sup>1</sup>-L- and -C(O)(C<sub>1</sub>-C<sub>6</sub>)alkyl;

6   R<sup>1</sup> is a moiety comprising a member selected a straight-chain or branched  
7       poly(ethylene glycol) residue; and

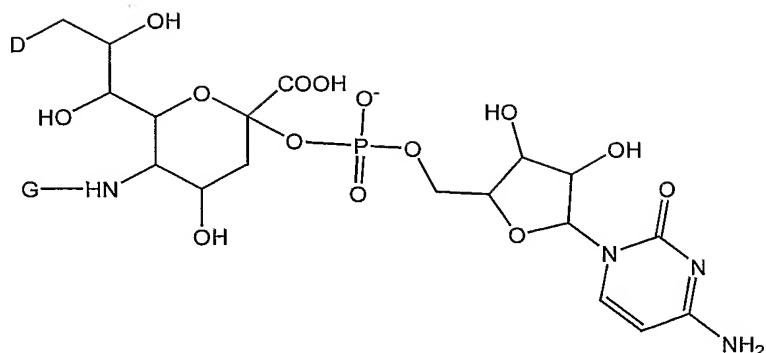
8   L is a linker which is a member selected from a bond, substituted or unsubstituted  
9       alkyl and substituted or unsubstituted heteroalkyl,

10   such that when D is OH, G is R<sup>1</sup>-L-, and when G is -C(O)(C<sub>1</sub>-C<sub>6</sub>)alkyl, D is

11       R<sup>1</sup>-L-NH-,

12   said method comprising:

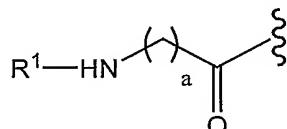
13   (a) contacting a substrate FSH peptide with a PEG-sialic acid donor moiety having the  
14       formula:



15

16 and an enzyme that transfers said PEG-sialic acid onto an amino acid or  
 17 glycosyl residue of said FSH peptide, under conditions appropriate for the  
 18 transfer.

1 14. The method according to claim 13, wherein L-R<sup>1</sup> has the formula:

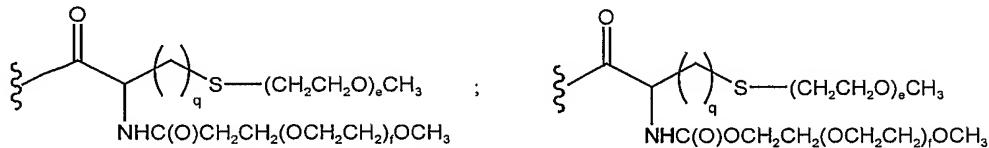


2

3 wherein

4  $n$  is an integer from 0 to 20.

1 15. The method according to claim 13, wherein R<sup>1</sup> has a structure that is a member  
 2 selected from:

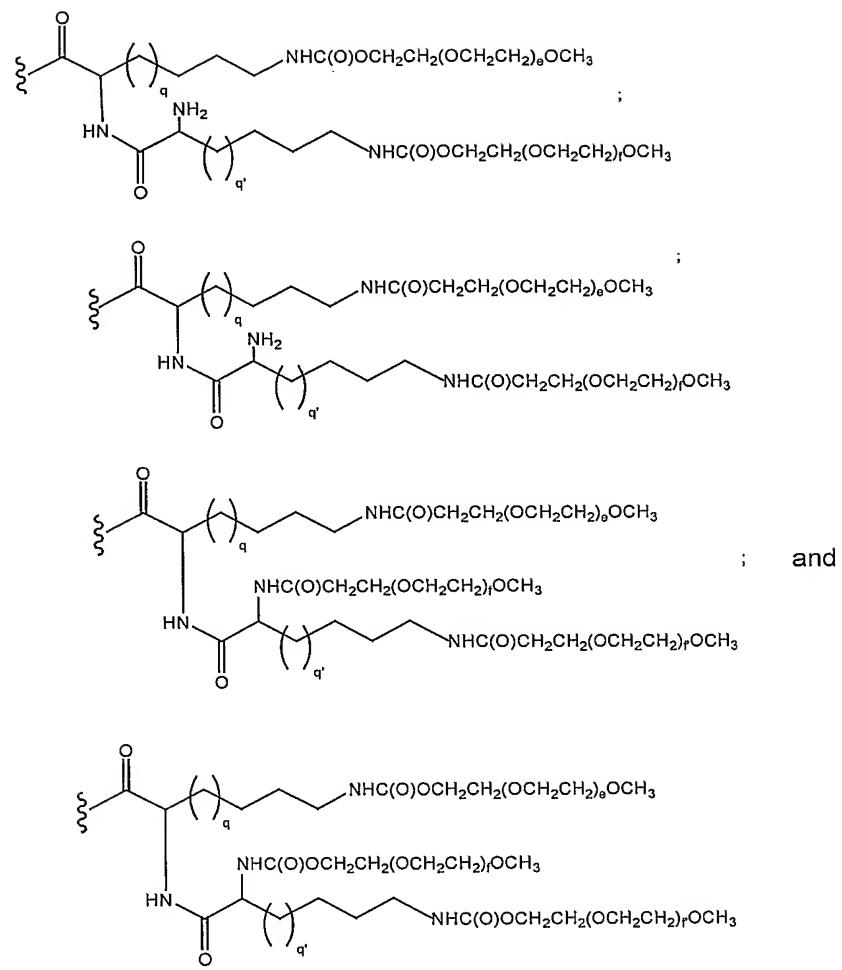


3

4 wherein

5  $n$  and  $f$  are integers independently selected from 1 to 2500; and  
 6  $q$  is an integer from 0 to 20.

1 16. The method according to claim 13, wherein R<sup>1</sup> has a structure that is a member  
 2 selected from:

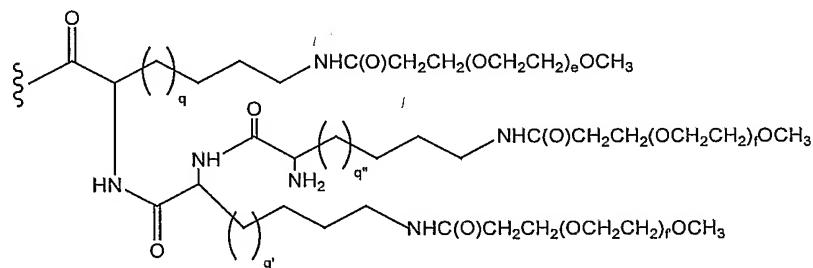
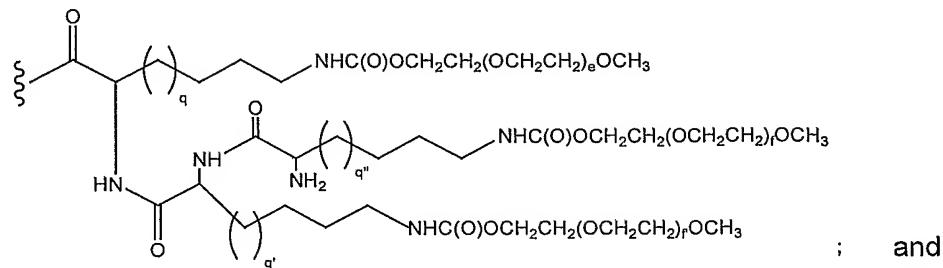


3

4 wherein

5  $\text{e}$ ,  $\text{f}$  and  $\text{f}'$  are integers independently selected from 1 to 2500; and6  $\text{q}$  and  $\text{q}'$  are integers independently selected from 1 to 20.

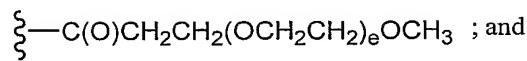
1 17. The method according to claim 13, wherein R<sup>1</sup> has a structure that is a member  
 2 selected from:



3  
 4 wherein

5 e, f and f' are integers independently selected from 1 to 2500; and  
 6 q, q' and q'' are integers independently selected from 1 to 20.

1 18. The method according to claim 13, wherein R<sup>1</sup> has a structure that is a member  
 2 selected from:



3  
 4 wherein  
 5 e and f are integers independently selected from 1 to 2500.

1 19. The method of claim 13, further comprising, prior to step (a):  
 2 (b) expressing said substrate follicle stimulating hormone peptide in a  
 3 suitable host.

1 20. The method of claim 13, wherein said host is selected from an insect cell and a  
 2 mammalian cell.

1 21. A method of stimulating ovarian follicles in a mammal, said method comprising  
 2 administering to said mammal a peptide according to claim 1.

1   **22.**   A method of treating a condition in a subject in need thereof, said condition  
2   characterized by reproductive infertility said method comprising the step of  
3   administering to the subject an amount of a peptide according to claim 1, effective to  
4   ameliorate said condition in said subject.

1   **23.**   A pharmaceutical formulation comprising the follicle stimulating hormone  
2   peptide according to claim 1, and a pharmaceutically acceptable carrier.